



## 3-Street Biological Wastewater Treatment Plant (SBR-Principle) of Town **Svilengrad** (Bulgaria)



Biological wastewater treatment plant for the Bulgarian town Svilengrad

- **Connection load:** >20,000 population equivalents
- **Sewer system:** combined system
- **Process target:**

BOD <sub>5</sub>	<	25.,0 mg/l
COD	<	125.0 mg/l
N <sub>total</sub>	<	15.0 mg/l
P <sub>total</sub>	<	2.0 mg/l
TSS	<	35.0 mg/l
- **Pre-treatment of wastewater:** compact pre-treatment station: consisting of fine screen, aerated "Cylindrical grit separator", grease trap and screw press
- **Aeration-technology:** HyperClassic®-mixing and aeration system
- **Sludge-treatment:** two aerobic sludge reactors with HyperClassic®-mixing and aeration systems
- **Sludge-dewatering:** High-performance centrifuge with SIMP-drive and addition of polymer paddle stirrer with dosing system for dry lime
- **Features:** separation of sand with patented "Cylindrical grit separator", simultaneous precipitation by phosphate and use of a FeCl<sub>3</sub>-solution, sludge dewatering with additional dosing system for dry lime
- **First start-up (Bio-stage):** 2014
- **Second start-up (sludge-stage):** 2015
- **Final acceptance test:** 2015
- **Wastewater quantities:** 2,522 m<sup>3</sup>/d (dry weather)  
446 m<sup>3</sup>/h (rainy weather)
- **Operation results:**

BOD <sub>5</sub>	<	10.0 mg/l
COD	<	60.0 mg/l
N <sub>total</sub>	<	10.0 mg/l
P <sub>total</sub>	<	1.0 mg/l
TSS	<	10.0 mg/l
- **Process-strategy of biological treatment stage:** low load aerated sludge system as 3-street SBR-WWTP, designed according to M 210, including nitrification, denitrification and simultaneous partial stabilization of the active sludge
- **Control-concept:** fully automatic operation with Siemens-SPS, SCADA-central control as well as remote maintenance



The wastewater enters primary cleaned by pressure pipes the compact pre-treatment station and is in the further process released from fine ingredients, sand and grease.



After pre-treatment, the wastewater is discharged by free flow and an inlet channel into the three SB-reactors



By especially developed HyperClassic®-mixing and aeration systems, the compressed air is smashed into finest air-bubbles



The discharge of clear water is performed by BSK®-decanters



By use of rotary piston pumps the thickened sludge is discharged from the sludge reactors into the dewatering unit. Firstly, it is mixed with a polymer-solution and afterwards it is dewatered to a DS-concentration of up to 25 % in a dewatering centrifuge. Then, lime is added, which could increase the DS-concentration to up to 50 %.



The control of the plant is performed automatically.



Next to the SCADA-system all data can be read by a state-of-the-art touch panel.